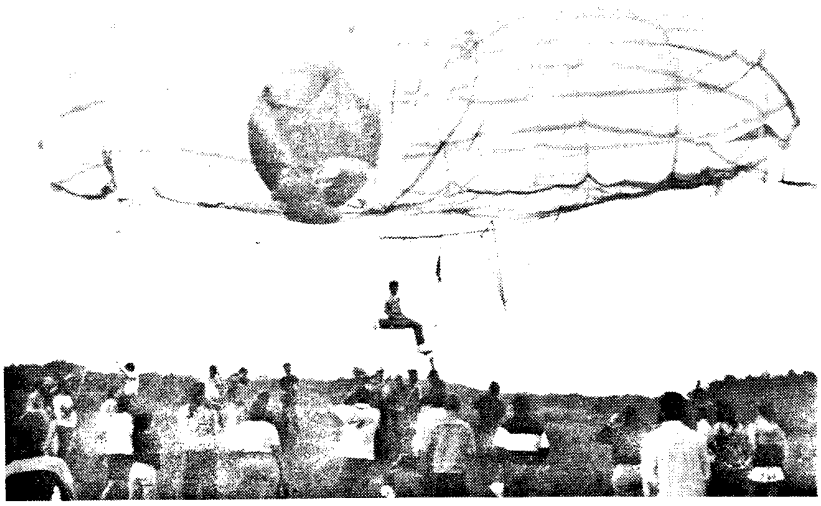
PyroTechnics 43

The Now & Then Newsletter of General Technics



Loosely in the sky, with Dramamine

Mary Lynn Skirvin Johnson

Once again, Guy Wicker has put together a successful General Technics Camping Berserker in the Upper Penninsula of Michigan. It took place over July 27th through July 30th of this year, and quite possibly had the largest attendance of General Technics folks ever.

Since the Keweenaw Penninsula is a great place to go sightseeing, hiking, and copper hunting, many folks came early so that they could take advantage of the extra attractions. For the most part, we all stayed at McLain State Park, which in recent years has lost some of its campsites due to the encroachment of Lake Superior. While we didn't take over the entire campgrounds, we did absorb around 20 to 25 sites. One non-GT camper was overheard to say that this was the biggest "church gathering" he had ever seen!

Copper hunting was quite interesting this time around. There were many more people interested in going out to the mine sites, and Todd Johnson, Tom Snoblen and Tullio Proni all brought their metal detectors. Todd got a list of good places to go from the owner of the Keweenaw Gem and Gift shop that included about 4 copper tailing piles north of the campgrounds. We were joined by Everett Duester (Cap'n Al's dad), his wife and their son, all of whom are avid rockhounds. At Central Mine some of the tailings had been recently hauled away as land fill, leaving an exposed area untouched by previous copper hunters. Many impressive pieces were unearthed there that ranged in size from small nuggets to at least one large twisted piece that weighed in at about half a pound.

Wednesday evening was marked by a terrific thunderstorm. We stood on the beach and watched the lightning flashing almost constantly over the lake, and the wind became wet and cold. As the surface of Lake Superior became white-capped and angry, we all ran for our tents, knowing that we were in for a good one. The rain came, along with tremendous thunderclaps as Todd, Cap'n Al and I all holed up in our tent to wait it out, and, hopefully sleep through some of it. It was not destined to be though, for, just as I was about to drift off to sleep, Al was heard to mutter something about water coming in. Within about ten minutes, there was a serious quantity of water coming through the seams of our old canvas tent, and we were forced to shovel our things into piles in the dry areas. The storm continued to grow in fury, and after a ear-numbing lightning stike nearby that blew out our tent light, we decided that it was hopeless. Todd ventured out, backed the car up to the door, and we shoved all our gear into the car, and made a dash for the Rent-A-Tent on my sister's site next door. It was there that we found that the Trembleys had also become storm refugees. As the storm contined to rage outside, we all bedded down in our wet clothes and tried to get what sleep we could.

Thursday saw the passing of the storm, and the first test-inflation of the blimp. John Frambach and Guy rolled it out to its full 60-foot length and used a shop-vac to fill it. As Guy crawled around inside its billowing silvery shape Todd videotaped him through the blimp's skin by pressing the lens up against it. We noticed the park rangers drive by once or twice, and on their third trip by, they asked us what we were doing. When we told them, they were amazed and took pictures of it out the window of their truck. I spent most of that day driving around Houghton trying to find waterproofing paint for the tent. Later that evening, we got a small expedition together and went out to the Dodgeville and Central Mine tailing piles where we found lots of smaller copper pieces.

Friday was set aside for a tour of the sights of the Upper Peninsula. We began at the Quincy Mine tower, which is nearly complete in its restoration. It was fun to take a look around and see how much it had been repaired from the huge rusting hulk it used to be. Then we descended on Esrey Park up near Copper Harbor, where about 30 GT folk had gathered for lunch. I had an enormous dragonfly land on me, and knowing how painful their bite can be, I found myself watching it in morbid fascination as it ate a fly it had caught and then flew away. We got some good pictures of it, but my skin crawled for about an hour afterwards. From Esrey, we all went up to the top of Brockway Mountain. It was a bright sunny day, so the vast expanses of forest land were clear and beautiful. Then, while some of our group split off, the rest of us went to Jacobs Creek Falls to climb on the rocks for awhile. The small waterfall was very swollen from the recent rain and quite picturesque. After climbing around for about 45 minutes, we decided to go back to camp, get some dinner, and then from there we'd head on out to DeBeaubien's cabin for fireworks on the beach.

We arrived just as night settled in and after finding our way down to the beach, we joined in on the making of s'mores with those folks already clustered around the bonfire. While Guy set off some tremendous display mortars, we sang songs, traded storm stories, and looked at the stars.

There is nothing that compares to the clarity of a Northern Michigan sky for star gazing, so a splinter group moved off down the beach so they could see the awesome number of stars out that night. We were also treated to a small aurora borealis out over the lake. It was soft, and glowed a luminous bluish-green. Bill Higgins was delighted. In his lifetime of being a physicist, he had never seen the Northern Lights. It was on this trip that I saw the splendor of the Milky Way clearly for the first time...

Saturday was the day for the launch of the great General Technics blimp, so cars began leaving camp quite early to go to Guy's parents' farm in Trap Rock. We left early too so that we could stop at Douglas Houghton Falls on the way. The sky was overcast and misty rain was falling, but the falls were still pretty impressive in its prodigious height and rushing water. There is even a half-obscured cave at the bottom that is rumored to go back into the rock for miles. We spent about an hour there, then we decided to get going since there was supposed to be a group picture at two o'clock.

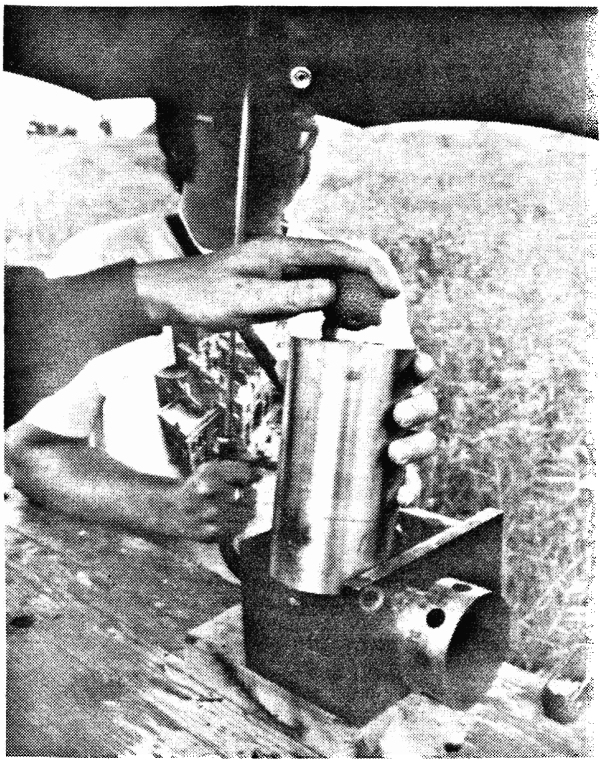
We arrived at the farm where there were already 20 or so cars parked along the drive. A gentle rain had forced most of the techies to retreat under a hastily constructed awning made from a large sheet of plastic thrown over a clothesline. As the afternoon progressed, the rain let up, kites were lofted and the blimp sealing neared completion. Meanwhile, the net weavers were hard at work knitting together large sheets of plastic mesh to make a large net. Once inflated, the blimp envelope would be contained in it and tied to the keel.

At 2:00, I made the call to assemble the crowd for the group photo. Out of necessity, this interrupted the hot dog cooking, the net weaving, the kite flying, the pasty eating and the blimp sealing; but it was the best chance I had of getting a group picture of over 66 techies in one place. After much jostling, giggling, and posturing for the cameras, everyone settled down and I managed to get several good shots taken.

One of the most interesting additions to this year's silliness was a profusion of headset and hand-held radio/walkie-talkies. This made it possible to communicate all over the farm without having to send runners to carry messages. Around ten people had them, and the jokes and commentary were constant throughout the afternoon.

Tullio Proni set up his custom-built cannon out in the meadow on a table made of cinder blocks and one-by-ten boards. He then loaded it with a black powder charge and a golf ball, lit the fuse, and ran like a bunny. It went off with a satisfying concussion that sent the golf ball into the air almost too fast for the eye to follow. Our man in Hollywood, Michael Davis, sent us a care package that contained a number of napthalene bombs. We are told they were left over from the television show "Miami Vice". They were the same charges used to blow up cars in chase scenes. It was decided that the best way to set these off would be to wire them up one by one to the old-fashioned plunger-type blasting machine that Todd had brought with him. They decided, however, to detonate Tullio's black powder bomb first. They scrounged around and found a large quantity of heavy gauge wire and wired the bomb up to the blast machine. A countdown was made over the headset radios, and then Todd pushed the plunger. The bomb went off with a terrific boom that echoed for several seconds after. Todd leaped about in joy because it was the first time he'd ever gotten to blow up something with his 'new' blast machine. The napthalene bombs were then wired up one at a time, and some of the newer techies like Paul MacNerland got to participate in the glee of setting off explosives.

Chris Osterling, from Detroit, brought a large yellow model rocket which he loaded and launched with a variety of engines. At first, he tried to wire it up to the blast box, but after two or three unsuccessful tries, he finally gave up in disgust and went back to fuses. His final and most spectacular launch was made with a "G" engine. After he lit the fuse, it hissed, sputtered, and then took off with the sound of a jet. It arced high into the sky and was still going up several seconds later. We watched it go until it was finally lost in the distance, and once it was gone, Chris took a bow to the enthusiastic applause from the audience.

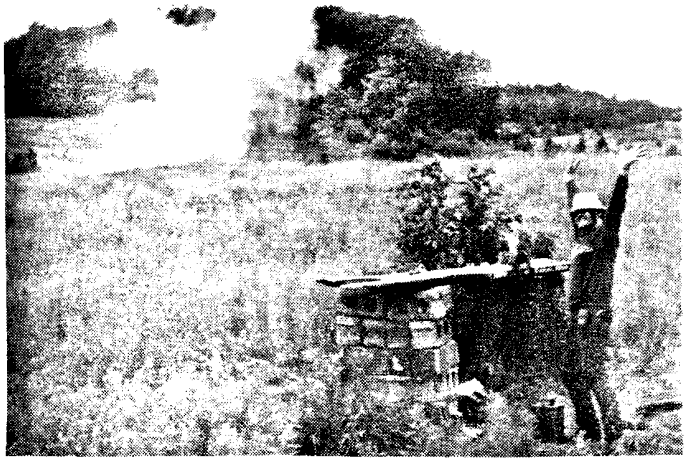


Loading Tullio's cannon.

About the same time that two steaming boxes of pasties were devoured, the blimp was declared ready for assembly, and a troop of coolies carried it down into the meadow where the keel was already in place. The whole procession reminded me strongly of a Chinese dragon from a New Year's parade, but without the goggled eyes and lolling tongue. Once laid out next to the keel, the blimp and its net were then unrolled. John McKana drove the hydrogen trailer alongside while the tether lines were one by one anchored securely to the keel. John and his assistants then uncorked the first of thirty tanks to be emptied into the blimp's envelope.

The filling took almost two hours to complete, not surprising since several additional anchor lines had to be added along the way. Resembling a large wasp without wings or legs, or a huge one-celled animal, the blimp bobbed lazily as the last tank was turned off and the truck driven a short distance away. There was an attempt to use weather ballons as baffles within the blimp's envelope, but they were surplus and one of them popped during filling. It was at this point that a vote sprang up for a name for it. Todd suggested 'The Gossamer Pasty', and Barry entered 'The Graf Paper'. Using a flip of the coin between them to decide, Barry and Todd then named Guy's dirigible 'The Graf Paper' amid laughter and clapping from the crowd.

Guy strapped himself to the small seat on the keel and then signalled the linesmen to play out the ropes slowly, allowing the blimp to rise gradually about 75 feet off the ground. He stayed up there about 10 minutes or so, and then decided to go ahead and attach one of the 5-horsepower model airplane engines with a rudder and an 18 inch propeller. After he and his dad fought with air bubbles in the gas line, Guy finally got the engine started and it roared to life. Calling for a release of the lines, he held on as the blimp heeled around and began to drift westward. However, one of the linemen



Todd has a blast.

failed to let go and then the blimp tilted forward on its nose at about a 40 degree angle. The propeller whined as it mowed the long meadow grass, and people scattered hurriedly out of its path. When the line was finally released, the Graf Paper righted itself and turned to bob comically off over the field. We followed it, and after the engine was shut off, the ground crew walked it back over near the launch site where several other folks were given the chance to go up. However, during Linda's ride, the keel twisted and the plastic netting began to pop ominously. Some hasty repairs were made and more people got rides as evening fell and the sun began to set.

"Good bye, Guy... hey, can I have your computer?"

At last, Guy decided that the time had come to decommission the Graf Paper and he and his ground crew walked the blimp around to a smaller meadow out in front of the house. As the gas was released, the blimp swung upwards on one end and it sagged tiredly. The empty envelope was rolled up, net and all, presumably stored for future modifications and hopefully, future launches. Darkness came; we cleaned up all our trash; and then we drove off in our cars, tired but happy from the fun we'd had that day.

The next morning saw the departures of GT folks almost constantly from 10 AM on. An impromptu breakfast was set up over at Barry and Jo's campsite, and a lot of the leftover food was brought out in the hope of using it up. Those of us that hung around for awhile joined them to relax and prepare for the long trip home. We broke camp around an hour later and packed our gear into the car. As we watched McLain State Park vanish behind us, we bid farewell to what was left of the beautiful Upper Peninsula...till next time.

Quarks

• Carol Poore married old-time GTer Bill Roper on Saturday, 5 August 1989, in a town halfway between Chicago and Milwaukee so friends from both cities could attend. Outside the reception hall the sign read POORE ROPER. (Clif Flynt had made off with the ampersand.) Best person was Gretchen Van Dorn, resplendent in tuxedo and high heels. The wedding was practically a state occasion in the world of filksinging, many of whose leading lights attended. Naturally there was a filksing that evening...

• Mike Jittlov's feature film, *The Wizard of Speed and Time*, will be released on videotape from Shapiro Glickenhaus Entertainment in December. It is an expansion of his famous short film of the same name: an autobiographical tale of a talented filmmaker who struggles against the obstacles Hollywood throws up in his path, triumphing at last in a shower of special effects. Techies will especially like the briefcase chase scene. Our spies have not learned of widespread theatrical distribution, though *Wizard* is being shown in isolated spots, such as Seattle and Boston (the Nickelodeon Theatre in Kenmore Square, 1 to 3 September during Noreascon). See it if you can—it's a mighty entertaining movie.

• Former Houghtonites are getting pretty fruitful. Colleen Kobe and Duane Corpe now have a daughter, Melanie Corpe, who put in an appearance at the Blimp Berserker. The family resides outside Cedar Rapids, Iowa. Over in Ohio, Lauren Elizabeth Westerfield was born on Bastille Day. She was 10 pounds, 1.5 ounces (4.58 kilograms)then but has grown some since then. (Her day of birth is the last time this publication will mention a lady's weight.)

• We are pleased to announce that the lifetime of the neutral cascade particle (Ξ^0)is now known to much greater precision than ever before, thanks to the tireless efforts of Dr. Keith Thorne and his colleagues on Experiment 621. That's right—Keith has finally finished his PhD, "attending" the University of Minnesota, but physically spending several years at Fermilab. The next big hur-

dle in the Thorne family is to get Kathy's geography thesis, on the way people read maps, finished. Oh, yeah—the cascade-zero lives for 2.98 ± 0.04(statisical error) $\pm$ 0.04(systematic error) $\times 10^{-10}$ seconds. This measurement had an uncertainty almost three times smaller than in any previous experiment.

• The recent Berserker Weekend demonstrated the usefulness of low-power 49-megahertz two-way radios. There were enough sets (maybe ten) to blanket the meadow, farmhouse, and driveway with a pretty effective net. There was always at least one person with a radio in any location you wanted to talk to. People at the barbecue could relay to people at the blimp pad to see whether they wanted mustard or ketchup on their hot dogs. Channel "A" (49.830 MHz) seems to be the *de facto* standard; keep this in mind if you're thinking about buying one.

• What's the best kind of museum exhibit? Right. The kind where you can push a button, or work a lever, and Make Something Happen. Some Chicago-area techies have recently gotten involved with Scitech, a new hands-on science museum at 1280 Iroquois Avenue in Naperville. Todd and Mary Lynn Johnson built a captive tornado machine and worked on the quark machine (a surplus slot machine where the fruit on the wheels have been replaced with up, down, strange, and charmed quarks, so you can make baryons). Bill Higgins helped put together a Voyager Neptune program so the museum can ride on the coattails of the recent interplanetary publicity. Check it out if you're in the area: (312)355-2299.

• You Saw It Here First: The August issue of *Boston* magazine contains an article on the cold fusion brouhaha called "Weird Science" by Art Jahnke. Jahnke concludes, "Although no one had verified cold fusion yet, the international marathon quest did produce something of lasting value," to wit, Bill Higgins's song, "Fusion Girl (Da Deuteron Ron)," which is printed at the end of the article, and was printed in the last issue of *Pyro*.

Cold Fusion, Cold War?

Franz Zrilich

The Illuminati strike back! Franz Zrilich had his paranoia button pushed by the fusion controversy, he writes: "This brings up an observation that I share with many others: what if what Pons and Fleischmann claim to have done is a deliberate act of disinformation? In the fifties, according to several sources, we deliberately gave the Soviets the impression that we seriously took psionics to be a credible weapon with vast potential. (Psionics is a body of pseudo-engineering devices that allegedly use mental telepathy as a power source.) Supposably, we had vast secret think tanks in isolated hinterlands force-feeding ESP Rhine cards to Army recruits in a widescale effort to build up a credible military corps of elite telepaths. The Soviets, apparently, took the matter seriously, and continue to this day to spend vast sums in a fruitless effort to develop a Thought Bomb or ESP Dean Drive. Of course, we encourage them, time-to-time, through carefully calculated releases of information: The Amazing Randi denounces CIA expenditures on ESP research, CIA Director Colby, on his death bed clams up on that subject in a great show of secrecy while being interviewed, etc.

Is it possible that palladium catalyzed fusion is a deliberate hoax intended to force an energy-starved Soviet Union to create another science city of tens of thousands of researchers, thus draining their economy further and faster?"

More from Franz: "Some fifties-sixties lost technology for George Ewing: nuclear powered bombers. A B-36 was rigged up with a working nuclear reactor and flown, through the reactor was not hooked up to anything - the plane's regular engines were used. Convair in the sixties actually designed a pregnant B-70 type aircraft with a massive tail end section for the reactor. It never got past the drawing board (though turbines and reactors were ground tested during what I believe was called Project Pluto). The project was cancelled because, in part, both the crew pod and reactor were only partially shielded, and the plane would become so hot after a few days use that ground crew would not be able to service it. The original idea had been to have nuclear bombers with crews of between seven and fifteen airmen cruise for upwards of a few weeks at a time without landing!"

Maybe we shouldn't look too hard for this one, some things are better left lost.

[On the other hand, think of the advantages of a plane the enemy doesn't dare shoot down! -- BG]

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Highly Pessimizing C Compiler for the Corporate Programmer

Our Guarantee: *Idio-C* must produce the largest, slowest, most crash-prone executable files you've ever used, or we'll buy you whatever product you *think* is better!

Not convinced? Listen to these satisfied users:

Up until two days before the biggest trade show in our industry, our new product was written and compiled using *Idio-C*, although of course we never told management that. The thing was buggy, slow and crash-prone. My boss was frantic. I told him I'd pull an all-nighter to work on it. It took me about twenty minutes to re-compile it using the M—— C compiler, and of course it ran like a rabbit after that. Now the boss thinks I'm a genius!

I've always hated slimming down code. You work all day to take out a couple of bytes here, a couple there. I compiled my last job with *Idio-C*, and every time I sat down I could take 5K or 10K out of the .EXE file. When I finally got the silly thing under 640K, I re-compiled it with T—— C, and the final size was 38K. Now the boss thinks I'm a genius!

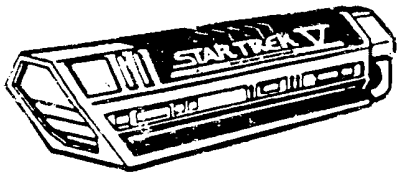
They had me working for this real jerk, but fortunately I had my *Idio-C* compiler. When he took the product up for a senior management review, I slipped him the copy I'd compiled with *Idio-C*. You better believe it was Sluggish Bug City! I was invited to the next management review, and I showed them the version I'd compiled with Z—— C. Of course, it ran perfectly. Now they think I'm a genius, and as far as the jerk, I understand he's back selling shoes.

My company's latest product was written, debugged and compiled by me using nothing but *Idio-C*. It runs just great. You have to do heroic things like that every once in a while, or nobody knows just how good you really are. Now everybody thinks I'm a genius (including me)!

TickTockTech

Software Division

Chuck Ott



SET PHASERS ON "TOAST"

Dr. Barry Gehm

Our nominee for the Hugo Award for Most Bizarre Merchandising Tie-In to a Science Fiction Movie appeared in the advertising and coupon supplement of a recent Sunday paper. The half-page ad exhorts us: "Get your own *Star Trek V: The Final Frontier* Kraft Marshmallow dispenser," and shows, against a background of the *Enterprise* floating in a starry field, a hand holding a grey polygonal tube-like device, from one end of which a marshmallow protrudes.

The accompanying copy perfectly matches the surrealism of the illustration:

> Experience the 23rd century with a one-of-a-kind, futuristic[1] marshmallow dispenser. It holds up to four Kraft Jet-Puffed Marshmallows. Its dual action lever opens and dispenses the marshmallows in a single motion[2]. The dispenser also comes with a durable plastic fork and spoon[3], making it ideal for camping trips[4]. It can be clipped to a belt or almost anything.

You'd been wondering what those doodads they wear on their belts are, hadn't you? Apparently Star Fleet had been plagued by a series of bad command decisions, which were traced to low blood sugar. Marshmallow dispensers were issued to all officers, who are now required to eat one marshmallow before making any critical decisions. Before initiating auto-destruct you have to eat all four, to make sure you're not just feeling cranky.

The ad also informs us that Kraft marshmallows are "The Official Marshmallow of the Starship *U. S. S. Enterprise.*"[5] You probably didn't even know they had an official marshmallow. I suspect the Kraft people are still kicking themselves for letting *Ghostbusters* slip through their fingers.

The price of this piece of Americana is $1.99, plus 25¢ shipping and handling and the UPC code from a bag of Kraft marshmallows. Not bad for a chance to experience the 23rd century. Hey, it's cheaper than getting your head frozen.

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[1]Not, as Bill Higgins says, like those clunky black Bakelite marshmallow dispensers we had when we were kids...

[2]... where you had to pull separate levers to open and dispense.

[3]You do eat your marshmallows with a fork and spoon, don't you?

[4]If only the Donner party had been equipped with these!

[5]Bill asks, "What do they do to a crewman they catch eating some other brand of marshmallow?"

Classified Ad

WANTED: Many bottles of Heinz mustard (wide mouth, non-pourable preferred). Contact Al Duester, (508) 540-3250 if your local grocery carries this! Please!

ISOTOPIC ANALYSIS

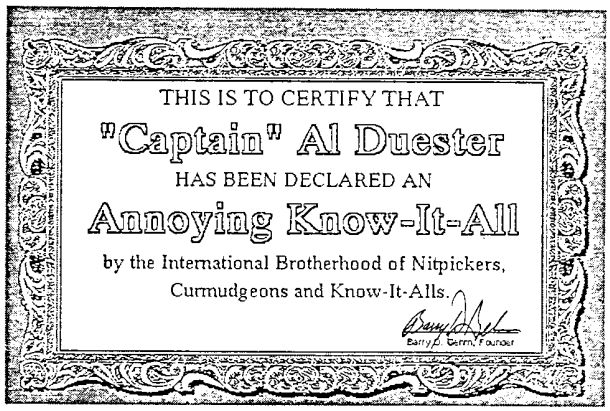
by Barry Gehm

Cap'n Al was the first to respond with the correct answer to the question posed in our last issue: What element other than hydrogen has names for its isotopes? The correct answer is radon, two of whose isotopes (^{219}Rn and ^{220}Rn) are called actinon and thoron because they are produced during the radioactive decay of actinium and thorium respectively. The most common, and first-discovered, isotope of radon (^{222}Rn) is produced by the radioactive breakdown of radium as part of the uranium decay chain. Radon is the radioactive gas that has recently been discovered lurking in all our basements. Cap'n Al wins the certificate shown below, which he can hang in *his* basement.

Todd Johnson wins an honorable mention. Todd was actually the first to answer the question, but was disqualified for answering *before* the issue was printed. Once again we see the tragic consequences of being ahead of one's time.

Confidential to R.O.: ozone is *not* an isotope of oxygen. Ozone differs from ordinary oxygen chemically, not nuclearly. Specifically, its molecules contain three oxygen atoms instead of the usual two. Different chemical forms of the same element are called allotropes. Graphite and diamond are the best-known examples of allotropes.

Exceptionally alert readers may have noticed that in the original article I put the atomic mass number to the right of the elemental symbol (H^3) and am now putting it on the left (^{222}Rn). Although the former is sometimes used, the latter is more correct, and is the system I intended to use. The appearance of the former system in the article provided another dramatic proof of Gehm's Law of Proofreading: Nothing so hones your proofreading skills as the knowledge that the text is totally and irretrievably beyond your power to correct.



Hawk Among the Loons

Flim-Flam by James Randi
reviewed by Barry Gehm

Do you have a comfortable bunk? Are you secure in the knowledge that when things go wrong, the fault lies not in ourselves but in our stars? Are you succored by the ability to predict bad days with your biorhythm chart? When the world's problems seem too complex for mankind to solve, are you comforted by the thought that the saucer people who built the pyramids will soon return to raise our consciousness? Are you snug and warm in your bunk?

If so, watch out! James ("the Amazing") Randi is out to debunk you.

Actually, I hope and believe that few if any *Pyro* readers subscribe to such nonsense. However, intelligence and education (even scientific education) are no guarantees against being suckered by bunk-peddlers, and I've known at least one GTer who adhered to one of the belief systems mentioned above. Moreover, we are surrounded by the legions of the benighted. Otherwise respectable newspapers print horoscopes. Books by von Däniken and others of his ilk are best-sellers. And just try to find the thirteenth floor in a tall building.

In sf fandom the situation is, if anything, worse. Tarot-readers, crystal-gazers and Scientologists are frequent sights at conventions. Can channelers and spoon-benders be far behind?

If you want to arm yourself against this onslaught, or worse yet if you're part of the onslaught (but have not yet lost all powers of rational thought), read *Flim-Flam,* James Randi's account of his adventures among the paranormalists. Randi is a stage magician who uses his professional knowledge to unmask those who try to pass off conjurers' tricks as psychic powers. He was one of the founders of the Committee for the Scientific Investigation of Claims of the Paranormal, and has been awarded a MacArthur fellowship (the so-called "genius" grants) for his debunking work. He was also on the committee selected by *Nature* magazine to investigate the recent claims by a French researcher that virtually infinite dilutions of antibody solutions were able to elicit responses from immune system cells. He is not a scientist, but he has a firmer grasp of what constitutes a controlled experiment than many of the supposed scientists working in parapsychology.

Randi's accounts of the parapsychological experiments he has studied will startle even a skeptic. The incredibly sloppy experimental designs, statistical fudging, wishful thinking and rationalizations are far worse than even a non-believer would guess. Most damaging of all is the routine failure of experimenters to exclude the possibility that their subjects are deceiving them with simple tricks of the magician's trade. Uri Geller is the most notorious example of this, and Randi has written a separate book (*The Truth About Uri Geller*) describing how he produces his metal-bending and other effects.

But *Flim-Flam* is not just a blast at incompetent parapsychologists. Randi opens with a detailed account and fresh investigation of the Cottingley fairy hoax of the 1920s, in which two English schoolgirls produced photographs showing themselves accompanied by small dancing figures in a wood near their home. The photographs, which look not at all convincing, were accepted as genuine by the leading members of the large Spiritualist movement in England at that time, including Sir Arthur Conan Doyle. Though almost no-one credits the photographs today, Randi thoroughly investigates the hoax, and draws from it a number of general observations about paranormal investigation, such as the danger in relying on people's truthfulness simply because they have no visible reason to lie.

Among Randi's other targets are astral projection, astrology, the Bermuda triangle and Atlantis (especially as promoted by Charles Berlitz), biorhythms, Edgar Cayce, Erich von Däniken, the Dogon-Sirius connection, dowsers, psychic surgeons, Scientology, Ted Serios, TM (especially its claims of levitation, etc.) and UFOs. Most of these you can find debunked elsewhere, but Randi presents a nice sampler of the paranormal from a critical perspective. More interesting to me, since they are unique to Randi, are his accounts of the various persons who have tried to claim the $10,000 prize he has offered to anyone who can demonstrate a paranormal ability under conditions that exclude cheating.

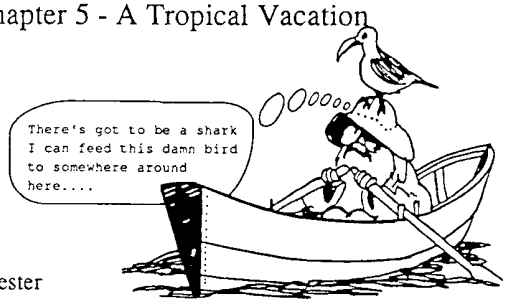
Notable among these was Randi's test of several dowsers. Dowsing is probably one of the most widely accepted and respectable paranormal practices; even normally skeptical people often wonder if there might not be something to it. Randi arranged with an Italian news program that was doing a special on the paranormal to prepare a small plot of land with underground pipes. An advertisement offering Randi's $10,000 reward produced several professional and amateur dowsers who assured him they would have no trouble tracking the flow of water in the hidden pipes. After going through the motions with their sticks, wires, and so on, each one confidently traced out the path of the water flow. None of the paths they charted followed the actual flow, nor did the dowsers agree with each other. Randi's prize still stands.

Flim-Flam was first published in 1982, and so does not cover such late-80s silliness as channeling and the crystal craze. With luck we may get more books from Randi covering these and other delusions. There seems little danger of the supply of raw material being exhausted anytime soon.

Books full of bullshit can be found at any newsstand, but rationality doesn't sell as well. If your favorite bookstore doesn't carry *Flim-Flam,* you can order it (ISBN 0-87975-198-3, 340 page trade paperback, $12.95) from Prometheus Books, 700 E. Amherst St., Buffalo, NY, 14215. I am informed that the publisher intends to let it go out of print when the current printing is sold out, so order promptly.

Cap'n Al Goes to Sea

Chapter 5 - A Tropical Vacation



by
Al Duester

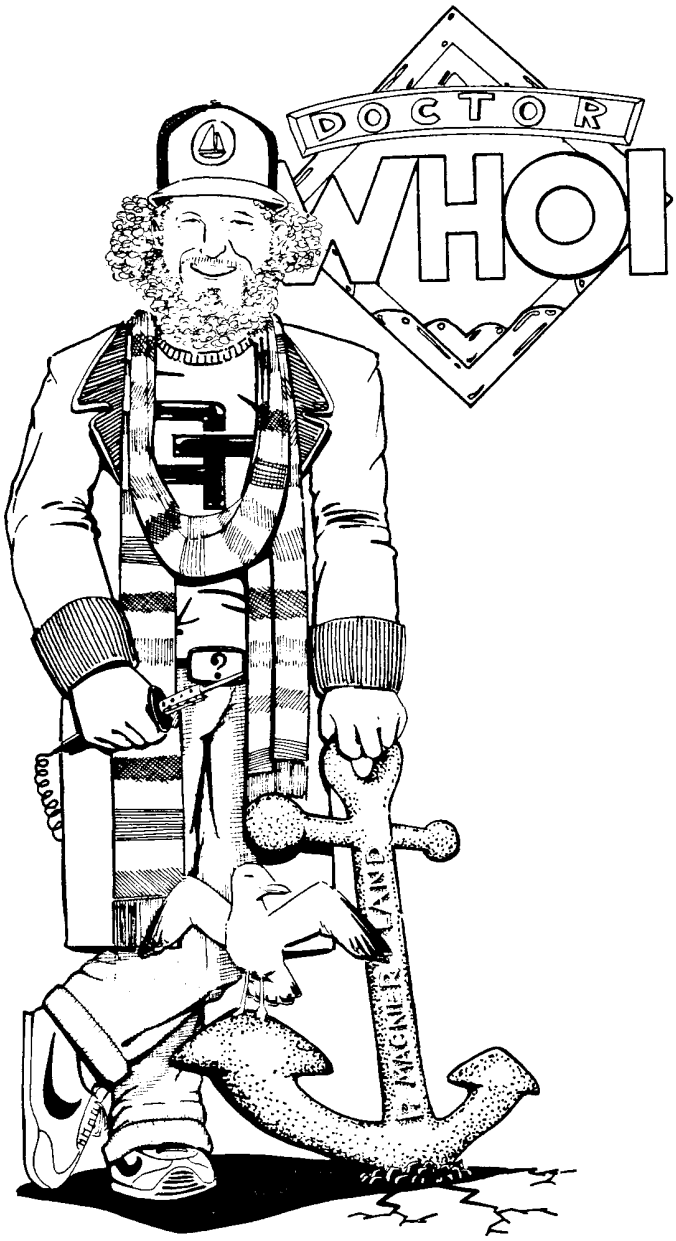
We've gotten back the data plots from the comparison CTD instrument that was being run on a wire in parallel with the Fish dives on the Gyre cruise. It looks quite impressive. We can see definite similarities between the structures of the water columns, as they were taken only hours and kilometers apart. Now we have to attempt to improve the performance of the Fish's control system, not to mention build another one! The data will show the physical oceanography people that the Fish is a viable instrument for their use.

There are no good cruise opportunities in late fall or early winter, so the decision is made to go to Bermuda for the next runs. The benefits actually justify it. Water deep enough for tests can be gotten to by going only fifteen miles offshore, and the shore lab will be easy to get back to for the modifications that we can't do on a small vessel. Costs should be no more than a short cruise on the more expensive larger ships.

Bermuda:

You know those small suitcases that fashionably dressed women haul around airports? Those ones that look like little pull-toys? I think every one should be outfitted with a small audible warning device so you're aware of them. Possibly a small yipping poodle sound would be right....

It can get interesting when there are three bored flight attendants and only eight passengers on the plane. With only six of us above legal drinking age and all of us moved into first class (the plane flies better with the weight distribution that way), the champagne breakfast was a good way to start things off. Our arrival in Bermuda was marked by sunlight, warm humid breezes, palmettos and the scent of flowers wafting in the wind. It only took about an hour to clear all the gear through customs and locate a large enough taxi to haul the instrument crate. The arrival at the Biostation was as interesting. Passing the banana grove and down the palm lined path, we were deposited at the entrance to an old hotel that had gone out of business when the airport went in



across the bay, and had done time as a hospital in WWII. It was now the Bermuda Biological Station for Research.

Little lizards appear to be Bermuda's equivalent of squirrels. There's a Chameleon on the seloum that grows right outside the lab window that keeps changing color. I wish I could have gotten a picture of him while he was a vivid blue & green, puffing out a red throat sac. Just beyond the seloum is a stand of bamboo, with some trees 60+ ft. tall and 5" in diameter at the base.

Then it was time to be introduced the the island's primary form of transportation - the moped. Now I've never driven a moped or motorcycle, and on general principles I think a motorcycle is about the most unsafe form of transportation that exists. But the speed limit on the island is 20 mph, and the drivers are courteous. Besides, you can't rent cars on the island. Of course, they all drive on the wrong side of the road, but one can get used to that. The most difficult part is the roundabout - what is known as a rotary or traffic circle on the east coast. Those of you who can recall your first experience with one will no doubt have a greater understanding of what it's like when you come onto one with all the traffic going the wrong way round.

On the one morning when I was free because the only task remaining was some programming in the fish, which was Al Bradley's task, Stan, Dale, & I took off on mopeds to go down to Hamilton. The rear tire on my moped went flat just on the other side of Hamilton. The others went and called the cycle livery, who arranged to have another bike brought out to me. Then they took off. After about a half hour the new bike showed up. This one then proceeded to stall out on me every three kilometers, and the next night the headlight quit.

The airport is across the channel from the Biostation, and it can get quite loud when the planes are nearly overhead. Surprisingly, a 727 is louder than a C-5A, and the small business jets louder than them. The smaller planes have a crackle that gives the sound more bite while the C-5A just rumbles away with the energy going into push rather than sound. It's an interesting way to relax, sipping a bitter at the station pub and watching the planes take off in the evening. The smell of burned Jet-A fuel is continuously being blown our way. The Biostation pub is really a members only club that's on a honor system. You pay your $10 lifetime membership fee, and are given the combination to the lock on the door. The name of the pub is The Passing Wind a.k.a. the Senior Common Room, and its mascot is a flatulating cherub with a pint in one hand.

Stan saw an 8" centipede in the laundry room the other day. The largest spider I've been able to find is behind the air conditioner cover panel in the lab, and it's only 2" long. It enjoys being fed moths that tend to wander into the lab at night. It's a Giant Crab Spider, and they are considered to be beneficial by those who can keep an objective view of such things, because they tend to feast on cockroaches, who they apparently catch by outrunning.

The water supply in Bermuda comes from the roofs. The roofs are shaped similar to a low angle stepped pyramid, and the water drains into cisterns in the basements or attics. I presume it's filtered before drinking, but I've been hesitant about actually asking. Nobody appears to have died of drinking it.

Because of the high humidity, the houses are all stucco, painted in pastel colors. I thought mold was a problem on the Cape! It's boring here though - there are PHd's watching Sesame St. after lunch! The prime time TV is 2 years older than the shows being shown in the US. About all that is hopping around here are the folks who are in charge of the Elder Hostel program. They're known as hostile elders because of the constant complaining and demands for high quality hotel service they expect (from a research facility?). They don't seem to have any concept of water conservation, either.

The humidity causes the floors, benches, and walls to be conductive. I've found myself getting shocks off the equipment. Apparently the wiring isn't quite right either.

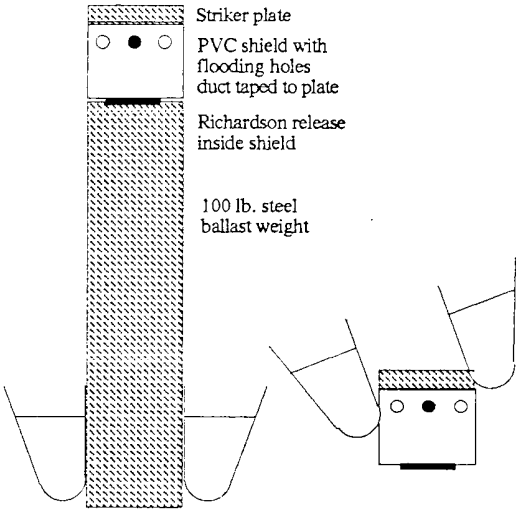
The first trip out on the R/V Weatherbird (called the Wallowbird because of its roll) was a bit distressing. I've never gotten seasick with less than a day and a greasy pork dinner, but after 4 hours out I donated my lunch to Neptune's minions (and don't ask me why apparently sane people take jobs like this - I don't know, I'm not one of them. Of course, I almost always have to get up earlier when I'm on vacation that I do when I go to work. You figure.). The Fish fared about the same. The first attempt to launch the Fish had a few problems. First, when we loaded the drop weight and rotated the fish to launch position, the weight fell out and chipped the paint on deck. The Richardson release had not been machined properly. There is a slit ring that keeps the release from falling apart the wrong way, and the ring's seating groove was too narrow. The ring couldn't provide a grip to hold the piston in place. We improvised and cut some 1/2" long pins from an XBT pin, then shoved them through the flooding holes to hold the piston in. The second time we rotated for launch, the entire assembly fell out. This time the magnet was not holding the weight with enough force. Surprising, as it had in Woods Hole under tests. It took 10 minutes to remove the shims that had been installed to reduce the residual magnetic grip. The next time, we were able to get it out of the cradle and into launch position successfully, almost. The

ship was rolling side-to-side, and the fish was starting to swing. We managed to get it into position past the fantail and drop it before it hit anyone or anything.

All went well until the recovery. Stan & Tony took the Zodiac out, and after the usual dousing managed to get the hook on the eyebolt at the fish's tail. We lifted the fish clear, and were ready to bring the A-frame inboard when the snaphook bent open and let the fish fall back into the water, missing the Zodiac by 3 feet. Luckily when it resurfaced it came up 30 feet away, instead of trying to clear a path through the Zodiac or the ship. This time Stan tied a line directly to the fish instead of using a snaphook, and we managed to get the swinging beast on board. We decided to head back to shore, because during the rough handling the setscrews at the rear had loosened and the fish was leaking a bit of oil. There was some concern that seawater had also gotten in, and we wanted to drain the tail assembly to make sure none had. The Weatherbird didn't have the space or lab facilities to allow us to do it onboard. There was barely enough room to set up the computer and wet paper recorder behind the wheelhouse. Once we got the data out of the fish, we were feeling much better - partly because of the excellent performance of the systems, but mostly because we were heading back to shore and had gotten to shallower, calmer waters.

The bad news didn't really show up till after we had been ashore for a day. The tail assembly was fine, but during the trip the nosepiece had sustained excessive fracturing. Two days earlier, the original nosepiece had to be replaced because one of the hydrophones had failed. If the replacement nosepiece's hydrophones were damaged, we would have to stop right there and head home. One of the recovery strobes was no longer operational, but the hydrophones had all come through working. We decided to attempt to backfill the cracks by wicking in some super-glue. After sitting down for several hours we decided that the failure mode had to be the fish attempting to turn toward the surface before the weight had fallen entirely out of the nose. The steel slug would just clear the nose, and the smaller diameter of the Richardson release would allow the whole weight to suddenly turn, which would then cause the striker plate at the rear of the weight to turn against the nosepiece, and stress it to the fracturing point while sliding out.

The solution this time was to turn down the diameter of the striker plate slightly, and also machine a tube of PVC plastic drainpipe to fit between the weight and disk, and hopefully decrease the possibility of suddenly torquing the disk against the nosepiece. Without the smaller diameter, we hoped for a smooth transition of the weight out of the nose. As you can see below, without the PVC section, the striker plate would get behind the tip of the nose edge and pull. We hoped the slight improvement would be enough. If we were lucky, we could get another drop or two out of the fish before the nosepiece was damaged enough to cause a hydrophone to fail, ending the possibility of doing any work.


Striker plate
PVC shield with flooding holes duct taped to plate
Richardson release inside shield
100 lb. steel ballast weight

In between times, I wandered the grounds of the station, did some enhancement programming on the controller program we use on the Macintosh, and generally goofed off. Not that it was much of a vacation, as it was raining when I had free time, and when it was sunny and/or calm we were busy working on the fish! The weather is the weirdest I've ever seen, going from cloudless to a driving horizontal rain eight times a day. The wind never really drops off, so the offshore swell continues to be too much for us to deal with.

The wind has been kicking up the waves, so we have to put off going out with the fish for another day. The forecast is for tomorrow to be lousy as well, so we may be extending our stay for another few days. Just as well, as the Cape got a foot of snow this morning. Toodled off on the moped and ordered a package of duty free liquor - Cointreau and Grand Marnier, a litre each at a total less than 2/3rds what I would have had to pay at the New Hampshire Drink'n'Drive (there are these large combination rest stops and state liquor stores right on the interstate about 20 miles north of the Mass. border). Then this afternoon I arranged a tour of the NASA tracking station for the four of us. We got to see the dozens of racks of receivers and processing gear that they use. We also saw the old Univac 1200 series computers they use. Ancient hulking monsters in green crinkletex finish, with big dial thermometers sticking out the front and back. The tour "guide", one of the engineers, opened one cabinet up and showed us the hundreds of little PC boards filled with discrete transistors, each board a flip-flop! A lot of the equipment was old, and I personally feel that NASA would save a lot of money if it upgraded to say, a Commodore-64. On the other hand, the old Univacs could probably survive a close hit with a nuke and keep on ticking - no matter that the dishes were blown away! We got there dry, but once again it was raining when we got out, and we got a bit wet coming back. I had brought my full set of foul weather gear, so only my feet got soaked. The Navy base that the NASA station is on has the only McDonald's on Bermuda on it - we didn't bother stopping in. I assume something akin to the Prime Directive is in force, preventing the Armed Forces from contaminating and destroying the Bermudian culture by making sure it stays on base.

The weather got continually worse, so we finally had to make the decision to return to Woods Hole, with only one Fish drop completed.

Bermuda has an interesting procedure of collecting a departure tax when you leave. If you've spent all your money, I'm not sure what they do. Seems to me it would make a lot more sense to collect an arrival tax! Stan got stopped by the metal detector at airport security. Of course, the attendant was adamant that the roll of quarters in his pocket had nothing to do with it - it was his all-plastic Instamatic camera!

R/V Endeavor April 1987

The Endeavor cruise was a short one - only five days. We couldn't complain! It was great as a last minute cruise of opportunity, unlike some of those other ones that rip out a three week hunk of your life. The ship left from Portsmouth, NH, and went to Narragansett, RI. This involved a lot of extra packing, as we had to take a Hertz rental truck to NH, and another one back to WHOI from RI. Aside from the packing and loading taking over twice as long, there were no problems. I had reservations about going out on "The Death Ship" again, as I've come to think of the Endeavor (For the reasons behind that name, read about a Triffid's attempt to kill me in Chapter 1 in Pyro 32). They've replaced the incompetent deck hands and are a pretty good ship to go out on now. Actually, the Endeavor is now a better ship than WHOI's in some regards. They have an operational SAIL loop running to meteorological sensors and the ship's navigation equipment, and they provide a marine tech as part of the crew to oversee the built-in computer lab and radio shack. Over the past months we had redesigned the sheath for the drop weight to eliminate the nose fracturing problem.

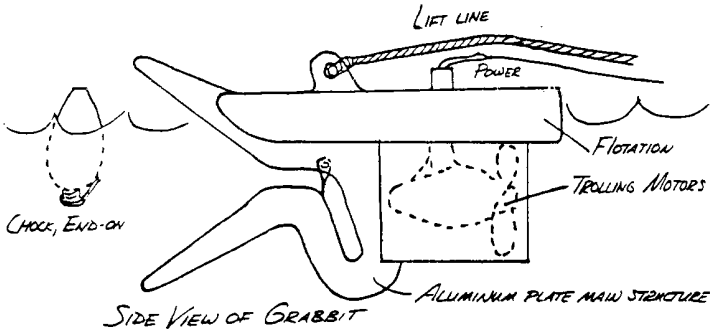
Al had decided that the original control system algorithms were not up to the tasks ahead, and had spent several weeks rewriting them. Naturally, like

all good programmers, he started from the ground up, since that's easier than trying to understand someone else's code.

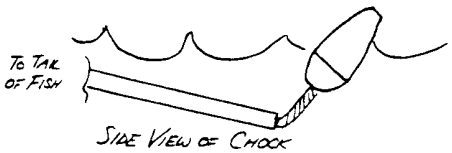
We got to the dock, known as Steel Beach, and I was horrified. The dock was a perfect example of decomposition at work. Most of the surface decking seemed to be a mixture of plywood sheets and 1" steel plates. I had to back a fully loaded truck through the morass and past the uncovered holes to get to the ship, or at least to within reach of the ship's crane.

We got the ship loaded without losing the truck or anyone through the dock, and then found that the truck rental depot in town had closed down last week. I drove it 30 miles to the nearest alternate drop, only to get back and find out we had to bring the rental car to that same location - the car depot had also closed down! After dropping off the car, we got back ten minutes before the scheduled departure time. The wife of the chief scientist (from the University of New Hampshire) on the cruise was able to get me back while the rest of our team spent the time tying things down.

The Fish's homing capability was again to be tested (those new control system algorithms), but the main thrust of this cruise was to try a new recovery system. The Zodiac wasn't practical in cold weather, and all of the other proposed recovery schemes had problems (Yes, of couurse, Senor, those rockets are to carry nets over to your interesting, ah, instrument! Please be so kind as to step this way where Manuel and his associates have several questions to ask you...). As the most effective recovery method we had yet used involved tying a rope to a Grad. student and throwing him in, and since ours had left, we decided to build a replacement. Named as much for the time of year as for its function, we were about to debut The Easter Grabbit. The problem with recovering the Fish (or any other instrument) is that it is very



SIDE VIEW OF GRABBIT



SIDE VIEW OF CHOCK

susceptible to damage when hit by a 1000 ton ship. Holding a boathook over the side only works well in calm seas, and only at close distance. Trying to hook onto a loop while the boat is moving, the instrument is moving, and the light, flexible pole is bouncing, each in a different semi-random, 3-dimensional motion, is not an easy thing to do. At the distance you have to be to do it practically with a pole, a wave can catch and throw an instrument into the side of a ship in a matter of seconds. We had to develop a system to grab the Fish while it was farther away, thus the powered boathook idea.

Standing on end the Grabbit's profile looked like the Playboy bunny (the rabbit symbol, not the more interesting shaped ones). Powered by two Sears trolling motors inside PVC ducts, with a separate lifting line and floating power cable running to it from the ship, it would cruise out to the floating Fish and swallow a chock we had mounted on the tail. The egg shaped chock would float, holding a line inside a pipe in an attitude such that it could be swallowed by the Grabbit's jaws. Pulling on the lift line would cause the Grabbit to rotate (sort of), and we would then haul the Fish to the ship and lift it on board. Someone had outfitted it with colored plastic Easter egg eyes, red on right, returning, of course. The tops of the trolling motor mounting tubes had been cut short, and segments of bicycle inner tube were urethaned on and kept pressurized to form a waterproof seal. Control was very simple. There were two spring loaded, bidirectional rocker switches, one for each motor. To go forward, you pushed both switches forward, to spin, one forward and one back. We had the switches driving power relays (no silicon in this baby!). Power was from Diehard marine batteries we carried out onto deck for use, and into the lab to charge. We had lots of fun off the dock in the early tests, tootling around in the boat well. It had worked well at grabbing the chock. It remained to be seen how the beastie would function in actual sea states, with real waves.

(An aside here - while some folks have claimed that GT has lost its bearings, I contend that it has served its purpose very well - it has gotten a lot of us into jobs where we get paid for doing the kind of things we liked to do as hobbies that we couldn't afford years ago. I designed and built the Grabbit, spending time in the machine shop hacking and banging fingers, at the electronics bench inhaling lead, and on the CAD system absorbing X-rays.)

We also had along a visiting Chinese guest investigator. He was learning about how we did things, and was working on learning microprocessor usage. His big project was a replacement for wet paper recorders using dot matrix printers. The test unit used an HP QuietJet printer with a 3x3 macropixel to provide 10 levels of visual differentiation. He was also helpful - too helpful. Always jumping in the way to assist, grabbing onto lines to help lift, etc. He was a topological wizard, able to generate a loop in a line where none had existed milliseconds ago, and then step into it (a very big not-good if the line is being payed overboard...). If he was around, things always took longer, as we had to watch him as much as the instrument we were working with! Nice friendly guy, though. He also had a habit of doing things like powering CMOS chips through their signal input leads (which will work, under certain circumstances, usually until you really need it to). Months after he left we were still finding these "Gong Bombs", affectionately named after him. He definitely was a quick learner, often spending his evenings learning by doing written translations of data books and rewriting instruction manuals (which he brought back with him to educate his countrymen). I hope he survives oceanography in China, or finds a more benign profession. Assuming that they let him run free - the local volunteer fireman & NRA activist taught him a rather unusual mix of American slang. "Wooahhh, deeep shit" in his strong Chinese accent was a definite tension breaker.

By now the surface of the drop weight electromagnet in the Fish had been exposed to enough salt spray and air that we could remove all the mylar tape and other spacers (most of which was falling off on its own). The layer of rust was working quite well at providing the needed magnetic gap.

More often than not the Grabbit would be hit by a wave from the side, spin around, and swallow its power cable. We would have to pull it in, untangle it, and redeploy it. By that time the Fish would have drifted out of reach and we would have to move the ship. We finally worked out a system where there would be one person handling the line and another the cable. I was able to learn to predict the action from waves and preset the direction so it would not get bound up. It was obvious we would have to change a few things around, though.

The next morning when we woke, the Easter Bunny had left little baskets of chocolate eggs on our computers. We took it as a good sign and got to work. We got around to dropping the Fish, and soon had the Grabbit in for its first tests. The Grabbit had a little too much weight in the nose. With the rocking action of the waves, it sometimes would dive under the chock. A little creative work with a hacksaw helped. The shape of the jaws will have to be changed to make it grab a bit better, as the chock keeps slipping over the jaw before it gets back to the catch mechanism (a highly sophisticated

device made from a piece of bent aluminum, spring loaded with the remains of a large safety pin). After the next run it's apparent that it's still too nose heavy, so we'll have to make the jaws out of nylon or polywhatchamaline, and get a single combination power and lift cable. More successful Fish drops, with the Grabbit working not quite as good as expected, but proving to be a good basic idea that needs refinement finish up the cruise.

(and we didn't lose anything!)

Cap'n Al is an "Ocean Engineer" - an electronic engineer who does instrumentation design at The Woods Hole Oceanographic Institution. He started this series to keep friends informed of what sort of perversions he was inflicting on the universe, being separated from them by hundreds of miles. Since then, the "Goes to Sea..." series has started being used as an introductory text in Oceanography in an east coast high school, and has recently performed the task of keeping the NSF appraised of what we're really doing with that money they keep sending us....

Dr. Techie Question Competition

Dr. Techie reports that he had finally succeeded in creeping up on a sleeping flamingo when a model rocket came whizzing over the northern horizon and struck the unfortunate bird squarely in the wishbone, leaving Dr. Techie with a cloud of feathers, a broken thermometer and a severe case of the jitters. The *Ask Dr. Techie* contest deadline has therefore been extended to the next issue. The subscriber submitting the best question will receive a free copy of *Asimov's Biographical Encylopedia of Science and Technology* (trade paperback, 1st revised edition). Send your question in now!

Deadline for submissions for PYRO #44 (next issue) is November 5, 1989.

Deadlines for the next few issues are as follows:
#45 - February 5, 1990(!)
#46 - May 5, 1990

...the fine print:

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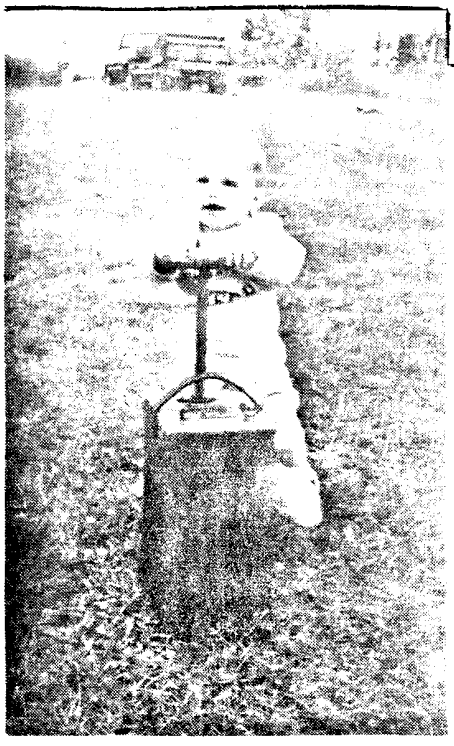

Baby Boom (Amanda Trembley)

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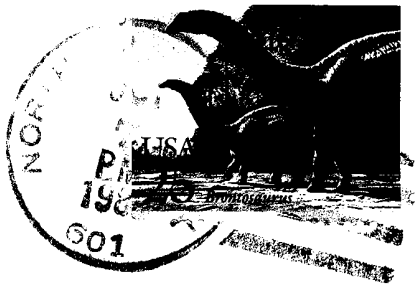

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